



BCD DECODER DRIVER WITH MEMORY

TYPE
BIP-8404
BIP-8408

- NIXIE® TUBE READOUT
- SCS MEMORY
- ELECTRICAL DECIMAL OUTPUTS
- PLUG-IN PRINTED CIRCUIT CONSTRUCTION
- ALL SOLID STATE

These BIP-8400 series modules are 8-4-2-1 BCD decoder readout drivers with memory for the standard rectangular NIXIE tube, type 8422 (B5991). The modules use Silicon Controlled Switches (SCS) as memory elements so that upon application of an "erase/write" command pulse, the units decode and display the BCD information which is present at the input terminals. This latching storage makes it possible to sample the BCD data presented electronically to the display and to hold it for visual display. Typical applications for these modules are in computer output displays, BCD counter readout, digital voltmeters, events per unit time meters, flow measurement and control, X-Y plotting and linear measurement monitoring. Bezel assemblies for multi-tube displays are available and are described in Bulletin 1020.

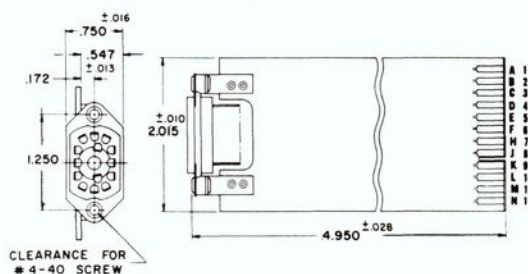
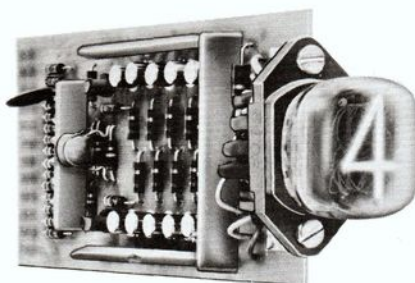


Figure 1. Outline Drawing

ELECTRICAL CHARACTERISTICS

INPUT SIGNAL - 4 bit (8 lines) 8-4-2-1 BCD*
Logic Levels (Figure 2a, Note 1, Table 2)

	BIP-8408	BIP-8404
Logic "1" (Turn "ON")	+5 to +16 V	-1 V to 0 V
Logic "0" (Turn "OFF")	0 V to +1 V	-5 to -16 V
Current (Out of the module)	0.5 ma max.**	0.5 ma max.
Input Impedance ($\pm 20\%$)	20 K ohm**	20 K ohm

* Other modules which can accept other BCD codes such as 5-4-2-1, 2-4-2-1, cyclic 20 gray, 4-2-2-1, watts and other gray codes are also available.
** when writing only, otherwise input is to a reverse biased diode.

ERASE/WRITE INPUT

See Figures 2b, 5a and 5b, Note 3.

POWER REQUIREMENTS

+200 Vdc ± 10 V	3.0 ma max.
+12 Vdc ± 1 V	12.0 ma nom.
	18.0 ma max.

TEN ELECTRICAL OUTPUTS

(L,C,M,B,H,F,J,E,K,D) Max load: 22 K ohm
(See Note 4)

MECHANICAL SPECIFICATIONS

Terminal Connections	Table 1
Outline Dimensions	Figure 1
Connection	24 contact printed circuit board
Receptacle	No. SR-113A (Fig. 4, Note 2)

Mounting Diagram	Figure 3
Component Height	0.575" max.
Temperature Range	— Operating 0° to +55°C
	— Non-operating -20° to +100°C
Weight (without tube) (Note 5)	1.8 oz. max.



Burroughs Corporation

ELECTRONIC COMPONENTS DIVISION
PLAINFIELD, NEW JERSEY

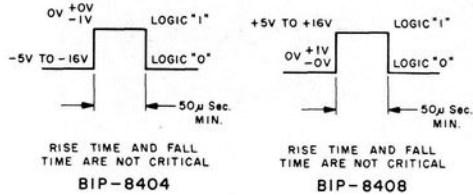


Figure 2a. BCD INFORMATION INPUT PULSE (See Note 1)

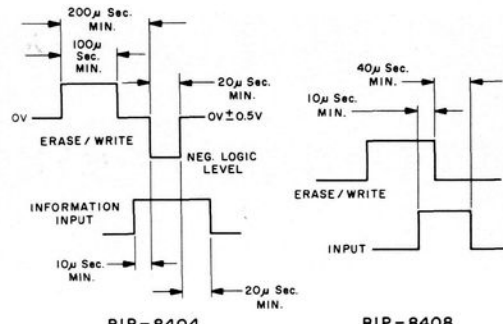


Figure 2b. ERASE/WRITE PULSE and TIMING DIAGRAMS (See Note 3)

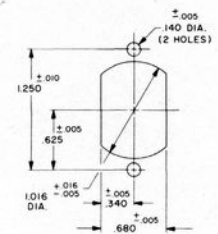


Figure 3. MOUNTING DIAGRAM

TERMINAL	INPUTS	TERMINAL	DECIMAL OUTPUTS
1	+12 Vdc	A	Not Used
2	BCD 1	B	3
3	BCD 8	C	1
4	BCD 2	D	9
5	BCD 4	E	7
6	BCD 2	F	5
7	BCD 4	H	4
8	BCD 8	J	6
9	BCD 1	K	8
10	Ground	L	0
11	Erase/Write	M	2
12	+200 Vdc	N	Not Used

Table 1 - TERMINAL CONNECTIONS

NUMERAL	CODE			
	8	4	2	1
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1

Table 2 - TRUTH TABLE

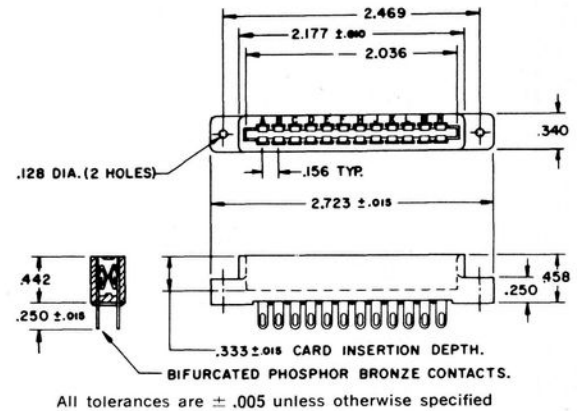
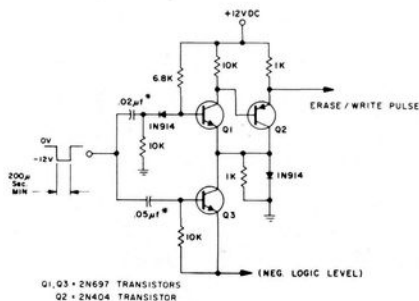
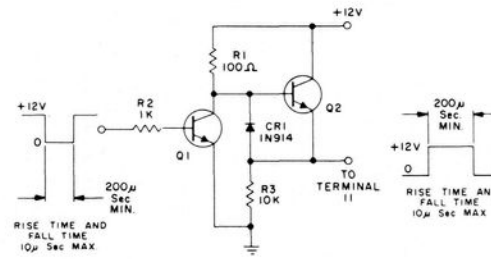


Figure 4. RECEPTACLE, SR-113A (See Note 2)



* Adjust capacitor values to achieve proper operation

Figure 5a. RECOMMENDED ERASE/WRITE PULSE GENERATOR FOR BIP-8404 (Drive up to 10 Modules)



Q₁ and Q₂ must have a minimum beta of 40 at 250 ma IC and a minimum beta of 20 at 1 amp IC; BV_{CEO} = 20 volts.

Figure 5b. RECOMMENDED ERASE/WRITE PULSE GENERATOR FOR BIP-8408 (Drive up to 10 Modules)

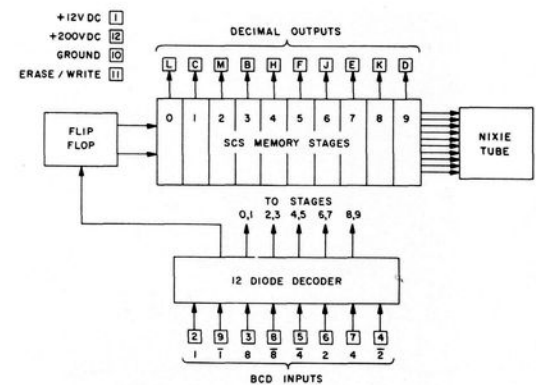


Figure 6. BIP-8404/8408 BLOCK DIAGRAM

NOTES

1. BIP-8404 and BIP-8408 are positive logic modules (logic "1" is more positive than logic "0"). However, if negative logic is used (logic "1" is more negative than logic "0"), the inputs must be reversed; i.e., reverse inputs to 1 and 1, 2 and 2, etc. Also, the BIP 8404 accepts negative voltage (less than ground) while the BIP-8408 accepts positive voltage (more than ground). See Figure 2a.
2. The SR-113A receptacle is supplied with the key unassembled (Fig. 4). The key must be inserted between terminal J and K, 8 and 9 prior to use. The receptacle is not included as part of the module and must be ordered separately.
3. The recommended circuits in Figure 5 generate the required erase/write pulses. These pulses (erase/write) must be applied in accordance with Figure 2b.
4. With a maximum load of 22 K ohm to ground, a 7 volt minimum negative going pulse from +12V (output measured with respect to ground) is available at the 10 output terminals. This resistive load can be reduced to 10 K ohm minimum if it is returned to +12 V.
5. NIXIE tube is not included as part of the module and must be ordered separately.